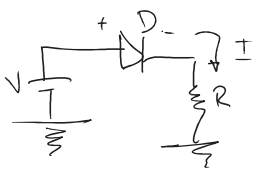
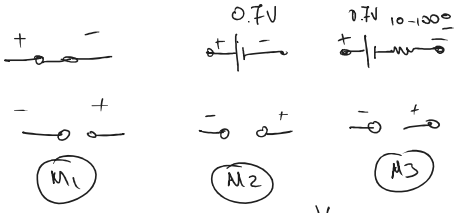
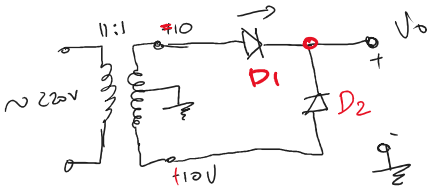


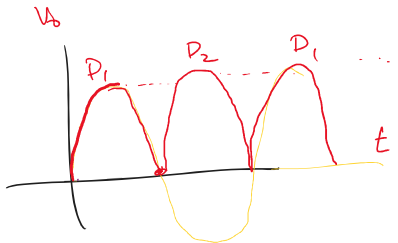


M4 $I = I_S\left(e^{\frac{V_D}{\eta V_T}} - 1\right)$

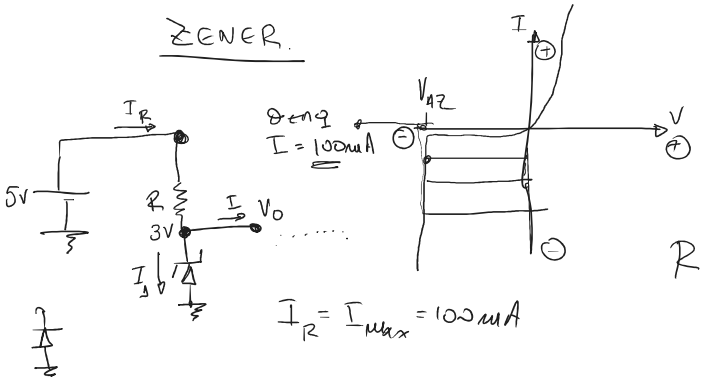
$\eta = 1 - 2$

$V_T = 25mV$





ZENER

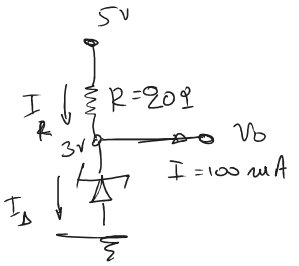


$V_{AZ} = 3V$

$I_R = I_{max} = 100mA$

$R = \frac{5V - 3V}{100mA} = \frac{2}{0.1}\frac{V}{A} =$

$R = 20\Omega$



$I_R = \frac{5V - 3V}{20} = \frac{2}{20} = 100mA$

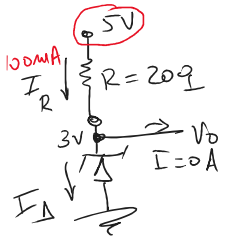
$I = 100mA$

$I_R = I_\Delta + I$

100mA 100mA

$\Rightarrow I_\Delta = \phi$

$P_W = 5V \times 0.1A = 0.5W$

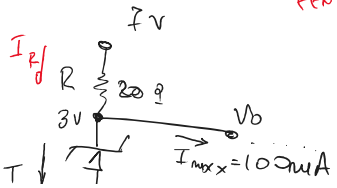


$\rightarrow I_R = \frac{5V - 3V}{20\Omega} = 100mA$

$I_R = I_\Delta + I \Rightarrow I_\Delta = 100mA$

100mA ϕ

$P_{ZENER} = 3V \times 0.1A = 0.3W$



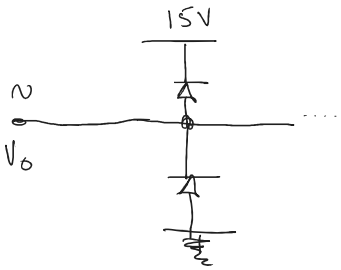
$I_R = \frac{7V - 3V}{20\Omega} = \frac{4}{20} = 200mA$

2. $\frac{1}{5}$ $I_{min} = 0\ mA$

$I_{Zmin} = I_R - I_{max} = 200_{mA} - 100_{mA} = 100_{mA}$

$I_{Zmax} = I_R - I_{min} = 200_{mA} - 0 = 200_{mA}$.

$\text{απόδοση} = \frac{P_{χρησ}}{P_{εισ}} = \frac{3V \times 0.1A}{7V \times 0.2A} = \frac{3}{14} \times 100\ \%$



BJT

Διόδοι
LED
Φωτοδίοδοι
ZENER.